

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

The application has been amended as follows:

Authorization for this examiner's amendment was given in a telephone interview with George Wasson on May 27 and June 4, 2010.

The claims have been amended as follows:

39. (CURRENTLY AMENDED) A method for operating a temperature controllable and pressurizable fixed volume pressure filter apparatus formed with an openable filtration chamber for separating a quantity of slurry (124) into slurry solids and slurry liquids to form a substantially dry slurry solids filter cake, said apparatus comprising:

at least one pressure sealable fixed volume filtration chamber (120) consisting of an upper inlet plate (100) having an inlet cavity (106), a lower outlet plate (102) having an outlet cavity (116), said inlet plate and outlet plate having continuous mating surfaces to form a sealable internal cavity, said inlet plate having entry port means (108) into said sealable internal cavity and said outlet plate having exit port means (118) for exit from said internal cavity, said lower outlet plate including a fixed porous support grid (112) adjacent to said mating surfaces, said filtration chamber of fixed volume being formed between the interior of said inlet cavity and the surface of said porous grid when said mating surfaces of said inlet plate and outlet plate are sealed against each other, means for opening and closing said filtration chamber by relatively moving said upper and lower plates, a movable porous filter medium (104), said medium being disposed within said filtration chamber between said continuous mating and sealing surfaces of said upper and lower plates and supported on said fixed porous support grid when said filtration chamber is closed and movable through said filtration chamber when said filtration chamber is open,

means for moving said filter medium through said filtration chamber when said filtration chamber is open,

a source of slurry, said source of Slurry (124) coupled with said at least one filtration chamber through said input port means when said plates are closed, at least one source of temperature controllable and pressurizable fluid (126,128,130,132) coupled with said at least one filtration chamber through said input port means when said plates are closed,

separate valving means (A,B,D,E,F) for controlling entry of said slurry and said temperature controlled and pressurizable fluid into said at least one filtration chamber after each closing of said filtration chamber,

means for controlling said separate valving means (80) to uniformly distribute aid slurry into said filtration chamber after each closing of said filtration chamber and for introducing said temperature controllable and pressurizable fluid into said filtration chamber at predetermined pressure and temperature when said filtration chamber is closed for separating slurry liquid from said slurry and passing said separated slurry liquid through said exit port means to form said slurry solids filter cake on said filter medium,

and means for moving said filter medium through said filtration chamber after each closing of said filtration chamber and when said filtration chamber is open by separation of said plates for discharging said slurry solids filter cake (104) from said apparatus,

the method including ~~by the method~~ steps of :

a) after each closing of said upper and lower plates to establish said at least one pressure sealable fixed volume sealed filtration chamber with said filter medium supported within said filtration chamber between said continuously mating surfaces, uniformly distributing said quantity of slurry (124, B, 108) in said at least one sealed filtration chamber (120) after said closing of said filtration chamber, pressurizing and temperature controlling said sealed filtration chamber to a predetermined pressure and temperature,

b) after forming said sealed filtration chamber forcing a first portion of said slurry liquid from said distributed slurry through the said filter medium (104) and through said exit port means in said sealed filtration chamber with a first quantity of said predetermined temperature controllable and pressurizable fluid (D,E,F, 108) to produce an initially formed ~~to initiate~~ formation of a filter cake of slurry solids and any retained portions of said slurry liquids within said filtration chamber on said filter medium, and

c) after forming said filtration chamber and while said sealable filtration chamber is closed and temperature and pressure controlled at least to said first predetermined temperature and pressure, introducing and passing dry steam or hot gas fluid (A, 108) through said filter medium (104) and said initially formed filter cake to heat and displace said retained portion of said slurry liquid from said filter cake and through said exit port means to form said substantially

dry slurry solids filter cake on said filter medium, said introduced and passed dry steam or hot gas fluid being maintained at least as high in temperature and pressure as the temperature and pressure in said sealed filtration chamber so as to be maintained ~~said dry-hot-gas fluid~~ in it's dry state and to prevent any precipitation of liquids onto said filter cake while said filter cake is in said filtration chamber ~~dry-steam or hot-gas fluid from changing phase from dry-to-wet,~~

d) after predetermined conditions have been attained, discontinuing said introduction and passing of dry steam or hot gas fluid,

e) after discontinuing said introduction of dry steam or hot gas fluid, venting said filtration chamber,

f) opening said filtration chamber by relatively moving said upper and lower plates,

g) then moving said substantially dry slurry solids filter cake on said filter medium through said open filtration chamber,

h) discharging from said open filtration chamber and from said filter medium (104) said substantially dry slurry solids filter cake from said filtration chamber formed during each closing of said filtration apparatus on said filter medium, and

i) repeating said steps a) through f) for successive closing and opening of said upper and lower plates in repeated operation of said pressure filter apparatus and for forming said substantially dry filter cake on said filter medium.

42 (CURRENTLY AMENDED) The method of claim 39 wherein said dry ~~hot gas~~ steam or hot gas fluid is dry steam.

43. (CURRENTLY AMENDED) The method of claim 39 wherein said dry ~~hot gas~~ steam or hot gas fluid is hot air, hot inert gas or steam, or combinations thereof.

44. (CURRENTLY AMENDED) The method of claim 41- 39 wherein said ~~hot gas~~ dry steam or hot gas fluid is hot gas or hot air, hot inert gas or steam, or combinations thereof, and is passed through said initially formed filter cake during each closing of said filter apparatus in a sequence of individual selection of hot air, hot inert gas or steam, or combinations thereof, in an order determined by an initial analysis of the slurry to be separated into slurry solids and slurry liquid.
50. (Currently amended) The method of claim 39 with the additional step of passing air or gas through said filter cake after said ~~hot gas~~ dry steam or hot gas fluid to cool said filter cake prior to discharging said dry filter cake from said open filtration chamber.
53. (Currently amended) The method of claim 52 wherein said dry steam or hot gas fluid is at a temperature of about 80 °C to about 230 ° C.
55. (CURRENTLY AMENDED) The method of claim 39 wherein said introduced and passed dry steam or hot gas fluid is selected by analysis of said slurry to be separated so as to prevent unwanted structural changes in said slurry solids in said filter cake formed in said pressurized filtration chamber.
56. (PREVIOUSLY PRESENTED) The method of claim 39 wherein means are provided in or associated with said filtration chamber for sensing conditions of temperature, pressure and filter cake formed condition, or combinations thereof, for controlling the distribution of said slurry in said filtration chamber and for controlling the introduction of said dry steam or hot gas fluid to said filtration chamber during each closing of said filter apparatus.

Art Unit: 1797

57. (CURRENTLY AMENDED) The method of claim 56 including the steps of sensing the temperature and pressure within said pressurized filtration chamber, controlling said distribution of slurry into said filtration chamber and said introducing and passing of said dry steam or hot gas fluid is in accord with said sensed conditions within said pressurized filtration chamber.

Claims 60-74 are canceled.

In the Specification, on page 6, at line 15 "tempreature" has been replaced with temperature , at line 16 "tempreature" has been replaced with temperature , on page 8, at line 16 "deaired" has been replaced with desired, and on page 13, at line 35 "si" has been replaced with is.

The Abstract has been replaced with the following:

(57) Abstract: A pressure-filter is disclosed along with its peripheral equipment that permit the automatic controlled operation of the filter for extracting liquids from a fluid liquid/solid slurry and for the formation of a substantially dry filter cake. The efficiency of the filter apparatus is increased by the use of hot gas as a material for treating the cake within the filter for extracting the liquids as filtrate. The hot gas may be hot air, hot inert gas, steam, or combinations thereof in controlled sequences. The filter is adapted to be able to operate under vacuum or elevated pressure and at elevated temperatures.

The following is an examiner's statement of reasons for allowance: Independent claim 39 and claims dependent therefrom are now deemed to distinguish over all of the prior art of record as well as obviate the Double Patenting rejection as well as the 112, 1st paragraph rejection, in view of the amendments to method step c) concerning maintaining dry steam or hot fluid gas in said filtration chamber so as to be maintained in it's dry state and prevent any precipitation of liquids onto said filter cake while said filter cake is in said filtration chamber. Support for such amendment is found, primarily at page 17, lines 8-17; page 17, lines 8-10. The applied prior art as well as related patents by applicant, suggest introduction of dry steam or hot gas or fluid into a sealed filtration chamber housing filter presses or other media, however then allowing temperature or pressure to be lowered prior to discharge of such dry steam or hot gas, without concern for preventing liquid precipitation or other formation of moisture onto filter cakes in the filtration chamber.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

JWD
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/Joseph W. Drodge/
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